REMARKS

The present amendment is prepared in accordance with the requirements of 37 C.F.R. § 1.121. A complete listing of all the claims in the application is shown above showing the status of each claim. For current amendments, inserted material is underlined and deleted material has a line there-through.

Applicants appreciate the thoroughness with which the Examiner has examined the above-identified application. Reconsideration is requested in view of the amendments above and the remarks below.

For purposes of Appeal, no claims have been amended.

No new matter has been added.

Rejection under 35 USC § 112, second paragraph

Claims 1-7, 9-12, 14-22, 24, and 42-47 stand rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner states that the independent claims, to wit, claims 1, 9, 11, 14 and 20, include the phrase "a cationic material that is residing on said at least portion of said fibers..." lacks of sufficient antecedent basis. Applicants disagree and submit that the phrase is fully supported in such claims.

As is recited, applicant's claimed integrated paper includes fibrillated fibers, active agents and a microbiological interception enhancing agent. This microbiological interception enhancing agent resides on at least a portion of at least

some of the fibrillated fibers and/or active agents. The microbiological interception enhancing agent comprises a biologically active metal precipitated with a counter ion of a cationic material to form a colloidal metal precipitate. In accordance with the invention, the cationic material resides on that portion of those fibers and/or active agents having the present microbiological interception enhancing agent, whereby its counter ion precipitates with the biologically active metal to form the colloidal metal precipitate on a surface of such portion of those fibers and/or active agents.

The Examiner takes the position that "it was never established that the fibers included any cationic material(s)." However, applicant disagrees since the pending claims clearly establish that a cationic material (having a counter ion) resides on that portion of those fibers and/or active agents having the present microbiological interception enhancing agent. It is further submitted that these limitations were previously presented and considered by the Examiner in now canceled claims 13, 15, 21, 23 and 41, as well as in amended claim 24, whereby the limitations of such canceled/amended claims are now presented in their corresponding independent claims.

It is for these reasons that applicant submits that the pending claims are properly allowable under 35 U.S.C. 112, second paragraph.

Rejection under 35 USC § 103

Claims 1-7, 9-12, 14, 16-20, 22, 24 and 42-47 stand finally rejected under 35 USC §103(a) as anticipated by Giglia et al. (U.S. 4,929,502) in view of Sawan et

al. (U.S. 5,817,325) for the reasons set forth in the Office action mailed April 17, 2007.

Applicant continues to disagree with the above rejections. The present invention is directed to integrated paper comprising at least a plurality of fibers, preferably fibrillated fibers (claims 1, 9, 11), more preferably fibrillated lyocell fibers (claim 14), and a microbiological interception enhancing agent on at least a portion of at least some of the fibers. The microbiological interception enhancing agent comprises a biologically active metal precipitated with a counter ion of a cationic material that is residing on the portion of the fibers to form a colloidal metal precipitate on a surface of such portion of the fibers. The fibers are fibrillated at a temperature greater than about 30°C and have an average fiber diameter of less than about 1000 nm (claim 1), and more preferably have an average fiber diameter of less than about 400 nm (claims 9, 11, 14).

The integrated paper may further include active agents (claims 1 and 14), whereby the microbiological interception enhancing agent is on at least a portion of at least some of the fibers and/or active agents. The integrated paper preferably has a mean pore size of less than or equal to about 2 microns (claims 1, 20). The integrated paper may also include silver oxide particles admixed with the fibers (claim 9), one or more acid neutralizing agents admixed with the fibers (claim 11), or a lead reducing agent admixed with the fibers (claim 20).

In the outstanding Office Action mailed October 16, 2007 the Examiner states that the applicant has only argued the secondary reference, while the rejection was based on a combination of references. Applicant disagrees and

submits that the combination of Giglia in view of the Sawan references was argued. In particular, applicant continues to submit that Giglia does not teach or suggest a microbial interception enhancing agent on selected fibers. The Examiner has recognized this deficiency of Giglia and cites Sawan to overcome the same. The Examiner states that Sawan et al. teaches the same interception enhancing agent as the present invention, citing Sawan at column 8, lines 45-68.

However, applicant submits that in order to overcome the deficiencies of Giglia, the Sawan patent must disclose or suggest that its interception enhancing agent resides on at least a portion of at least some of the fibers and/or active agents. That is, contrary to the Examiner's interpretation in the outstanding Office Action, applicant is not arguing that Sawan "does not teach the precipitation of the biological agent on the fibers or the active particles," but rather that Sawan simply does not disclose, suggest or contemplate that a microbiological interception enhancing agent can reside on at least a portion of at least some of the fibers and/or active agents. As discussed further below, applicant continues to submit that Sawan is limited to organic matrices that have been treated with a biocidal liquid to form antimicrobial coatings and films that may be applied directly to a wide range of surfaces. (Col. 4, ll. 33-41; col. 8, ll. 41-43; col. 9, ll. 44-46; and col. 11, ll. 14-19.)

Further in the outstanding Office Action, the Examiner states, with respect to Sawan, that "[c]oating the microbiological interception agent onto a substrate is only a preferred embodiment of the U.S. '325 reference. Note that they teach that adding the interception agent can be done either by producing it, i.e., making it first, and then adding to the substrate or can be formed in situ in the substrate, see

for example, column 4, lines 3 through 10." However, applicant disagrees with the Examiner's interpretation and continues to submit that Sawan is limited to coatings or films that have been contacted with a biocidal material to form antimicrobial coatings or films.

In particular, Sawan discloses devices, articles and surfaces coated with and/or containing contact killing non-leaching antimicrobial materials that are capable of killing microorganisms on contact. (Abstract, col. 2, ll. 20-25.) The antimicrobial materials are either a contact-killing antimicrobial coating on a surface of a substrate, cast into a freestanding antimicrobial film, or incorporated into a carrier to provide a bulk antimicrobial, which can be applied as desired to form a contact-killing antimicrobial layer. (Col. 2, ll. 26-31.)

The antimicrobial material may be an organic matrix that reversibly binds or complexes with a biocide that is intercalated within the matrix, whereby the organic material penetrates a portion of a microorganism's cell membrane to permit insinuation of the biocide into the microorganism. (Col. 2, l. 46 to col. 3, l. 10.) In one embodiment of Sawan, the organic material is crosslinked to form a matrix (col. 3, ll. 30-44), whereby the biocidal material non-leachably binds to or complexes with the organic matrix (col. 3, ll. 45-67).

In another aspect Sawan teaches liquid compositions for forming a contact killing, non-leaching antimicrobial layer or coating on a surface. (Col. 4, l. 1-2.) These liquid compositions may include first and second liquids of an organic liquid (optionally with a crosslinking agent) and a biocidal liquid. In forming this antimicrobial coating, the organic liquid (and optionally the crosslinking agent) is

applied to the substrate to form an organic matrix thereon by any suitable means for applying a liquid coating (col. 4, ll. 56-59) (optionally the matrix may be cured if the crosslinking agent is present). This matrix is then contacted with the biocidal liquid so that the biocidal material sufficient to deposit the biocidal material into the matrix such that the biocidal material becomes attached to or associated with the matrix. (Col. 4, ll. 3-19 and ll. 33-67 and col. 5, ll. 3-7.)

Alternatively, the liquid composition may include the organic liquid, biocidal liquid and optionally a crosslinking agent, all within a single solution, which is applied to the substrate to form the contact-killing coating thereon. (Col. 4, ll. 20-28 and col. 5, ll. 8-20.

As another embodiment, Sawan teaches that the two-part or one-part compositions described above may be cast to form a freestanding antimicrobial film. In so doing, the organic liquid is formed into a film on a substrate, is contacted with the biocidal liquid to deposit the biocidal material within the matrix of organic material, and is then removed from the substrate to form the freestanding antimicrobial film. (Col. 5, ll. 37-59.) These freestanding films may be ground into a powder. (Col. 5, ll. 60-64.)

Again, the Examiner has recognized that Giglia does not teach or suggest a microbial interception enhancing agent on selected fibers. In view of the above discussion, it is submitted that Sawan also does not teach or suggest a microbial interception enhancing agent on selected fibers, moreover, on a portion of at least some fibers and/or active agents of an integrated paper. Sawan is limited to antimicrobial coatings or films comprising a biocidal material that has been

deposited into an organic matrix such that the biocidal material becomes attached to or associated with the matrix, whereby these coatings or films may be applied to various substrates.

Bearing the foregoing in mind, if one were to combine the teachings of Giglia and Sawan, the antimicrobial coatings or films of Sawan would be applied to the filter medium of Giglia to form an additional layer thereon such filter medium. As is claimed, the filter medium of Giglia would not include fibers and/or active agents having a microbiological interception enhancing agent on at least a portion of at least some of such fibers and/or active agents, whereby the microbiological interception enhancing agent comprises a biologically active metal precipitated with a counter ion of a cationic material that is residing on such portion to form a colloidal metal precipitate. In accordance with applicant's invention, the precipitation of the biologically active metal with the counter ion of the cationic material enables controlled precipitation and formation of the colloidal metal precipitate. In so doing, since the cationic material is on some of the fibers of the paper, the colloidal metal precipitate is integrated directly in the paper itself, i.e., it is not merely a coating, film or additional layering on the paper.

In the outstanding Office Action, the Examiner also states that fiber loading is well known in the art, and therefore, loading the fibers with an antimicrobial intercepting agent would have been obvious to one of ordinary skill in the art. However, applicant submits that Fiber Loading is a well known method for manufacturing precipitated calcium carbonate directly within the pulp process for making stronger paper. This process would not make it obvious to one skilled in

the art at the time of the invention to provide an antimicrobial intercepting agent on fibers for making a paper that has increased antimicrobial properties. Moreover, Fiber Loading methods would also not make it obvious to one skilled in the art at the time of the invention to provide an antimicrobial on at least a portion of at least some of such fibers and/or active agents of the paper.

Applicants submit that neither Giglia nor Sawan contemplates or suggests that a microbiological interception enhancing agent can reside on portions of some fibers and/or active agents. It is only applicant's disclosure that teaches these limitations, which of course, is improper as a hindsight reconstruction of applicant's invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983) (Hindsight based on reading of the patent in issue may not be used to aid in determining obviousness). The cited references, and not in retrospect, must suggest doing what Applicant has done. *In re Skoll* (CCPA 1975) 187 USPQ 481. Likewise, hindsight and the level of ordinary skill in the art may not be used to supply a component missing from the prior art references. *Al-Site Corp. v. VSI International, Inc.*, 174 F.3d 1308, 1324, 50 USPQ2d 1161, 1171 (Fed. Cir. 1999).

In view of the foregoing, and under the applicable patent law in this area, applicants submit that the claimed integrated papers of the invention are distinct and novel over the prior art of record, and as such, the pending claims are properly allowable under 35 USC 103.

It is respectfully submitted that the application has now been brought into a condition where allowance of the case is proper. Reconsideration and issuance of

a Notice of Allowance are respectfully solicited. Should the Examiner not find the claims to be allowable, Applicants' attorney respectfully requests that the Examiner call the undersigned to clarify any issue and/or to place the case in condition for allowance.

Respectfully submitted,

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